

Rec'd 3/19/13



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

March 13, 2013

Ms Josephine Newton-Lund
Kansas City District, Corps of Engineers
700 Federal Building
Kansas City, MO 64106-2896

RE: RI/FS Activities for Operable Unit 2 (Vapor Intrusion Pathway) St. Louis Ordnance Plant Former Hanley Area, St Louis, Missouri

Dear Ms Newton-Lund:

The Department has completed its review of the above referenced document and provides the following comments along with comments from the Department of Health and Social Services.

Department of Natural Resources

General Comments

- 1) The Department recommends evaluating the difference in the potentiometric surface of the shallow and deep monitoring wells in some of the early well installations (MW-107S, MW-108S, and MW-109S) to determine: (1) if two distinct groundwater zones exist and (2) whether there are measureable differences in contaminant levels if there are two distinct groundwater zones. If there are not two groundwater zones or no differences in contaminant levels, the need for nested pairs is questionable. If deep monitoring wells are not needed they could be converted to shallow wells and installed in additional locations in the study area to provide additional information on the nature and extent of the groundwater contamination and potentiometric surface.
- 2) Due to the proximity of the carbon tetrachloride plume to the tunnel system, vapor intrusion could be significant and present excessive risk. Vapor intrusion sampling within the tunnel(s) may be necessary in the vicinity of the plume to evaluate risk and, if excess risk is present, restrict access and confirm vapor is not migrating through the tunnels onto Job Corps property and infiltrating into Job Corps buildings.

0744

40467518

3.0



Superfund



0001

- 3) The vapor intrusion risks associated with new construction on Army property also needs to be evaluated determine if excess risk is present. This assessment should also include the installation of basements in newly constructed buildings on Army property.
- 4) If excess risks are identified in the RI/FS, the Department would like the Army to consider amending or rewriting the OU1 Record of Decision to address both operable units. The OU1 ROD would be a better document if some revisions were made to the wording and there will be overlap between the groundwater contamination and vapor intrusion. Combining both operable units into one ROD would allow the Army to address all risks in one document and conduct a single five-year review. The regulators would like to discuss this option in future meetings.
- 5) The Department strongly requests that the Army install at least the shallow well in the alley near PP-11 to further refine the potentiometric surface. This well in conjunction with the one at PP-17 and the additional new and existing wells would allow the Army to have a much clearer picture of the groundwater surface and flow for the entire block north of the site. It may also provide an additional well between the site and the daycare with contamination below the VISL screening levels and indicate groundwater flow is away from the daycare.

Specific Comments

- 6) Page 16, lines 31-32: The underground storage tanks at the former St. Louis Army Ammunition plant have been removed and the closure completed.
- 7) Page 18, lines 15-21: Although this is not the document or the time to discuss the aquifer test, the Department has notable issues with the testing and does not support the conclusion for numerous reasons. In addition, nothing prohibits the use of groundwater for industrial purposes.
- 8) Page 20, lines 3-12: The Department recommends the installation of sentry/monitoring wells to accurately delineate this plume and allow periodic sampling. Direct push borings cannot be properly developed and purged prior to sampling, resulting in unreliable data. The lack of carbon tetrachloride in CB-02 while levels of interest are present in MW-115 located further up-gradient supports the need for additional monitoring wells to delineate groundwater contamination. Reliable groundwater data is also needed to model vapor intrusion risks in new buildings with/without basements and the existing tunnels. The wells would also be used to monitor contaminant levels, groundwater depth and plume migration.

- 9) Page 25, lines 23-25: This statement is accurate but it does not mean the subslab vapor is not resulting in excess risk.
- 10) Page 25, lines 34-35: Either groundwater or subslab VOC concentrations could warrant VI assessments of other properties.
- 11) Page 27, line 11, Table 11-1, DQO#1: This RI is to identify vapor intrusion risks off Army property (not just along Stratford Avenue) and also to delineate the vapor intrusion risks on Army property. This mobilization may not achieve this objective and require additional field work.
- 12) Page 27, Table 11-1, Step 1, second point: This statement is too narrow and doesn't encompass the additional goal of this RI, which is to define the nature and extent of groundwater contamination that can present a vapor intrusion risk.
- 13) Page 27, Table 11-1, Step 2: The Army needs to determine where VOCs in the shallow groundwater are above VISLs, both on and off Army property; not just in a few defined locations. The scope of an RI is only defined by the extent of the release not by the confines the Army wants to work within. The Department understands completing the RI may be an iterative process.
- 14) Page 28, Table 11-1, Step 4: See previous two comments.
- 15) Page 28, Table 11-1, Step 4, last point: Given the extreme drought in 2012 and the potential for continued dry conditions in 2013, the Department does not believe 2 sampling events in a three month period is adequate to gain a full and accurate understanding of the groundwater and contaminant levels. Without this understanding, it will be impossible to accurately identify where the potential vapor intrusion exists and if the pathway is complete. The Department recommends a minimum of at least one year of quarterly groundwater monitoring.
- 16) Page 29, Table 11-1, Step 2, second point: The potential for future vapor intrusion cannot be accurately assessed until a minimum of at least one year of quarterly groundwater monitoring has been completed.
- 17) Page 30, Table 11-1, Step 4: These are the initial study boundaries; again the scope of an RI cannot be defined by a document, as the extent of the release defines the scope.
- 18) Page 30, Table 11-1, Step 5, second point: After identifying excess risk due to vapor intrusion in a residence, especially after notifying a resident that they are being exposed to excess risk from vapor intrusion by chemicals released by the Army, the Army must

immediately mitigate. The Army should begin researching mitigation alternatives and develop a plan that can be immediately initiated in this situation.

- 19) Page 30, Table 11-1, Step 5, sixth point: Again, the decision to terminate VI sampling should not be made until a thorough groundwater study is completed.
- 20) Page 31, Table 11-1, Step 6, second point: The Department did agree to these initial locations but the study is not limited to these locations.
- 21) Page 31, Table 11-1, Step 7, number 1: The Department would like all VI sampling events completed simultaneously or within the same week along with groundwater surface measurements.
- 22) Page 31, Table 11-1, Step 7, number 3: Please clarify if 3 rounds of sampling will be completed at all the residences during the RI or if three VI sampling events total regardless of when some of the events occurred. The Department recommends three events at all the residences at the same time to remove the temporal variance from events that occurred previously during different environmental conditions.
- 23) Page 31, Table 11-1, Step 7, number 4: In addition to the parameters listed, the Department recommends noting the status of the HVAC system and the windows.
- 24) Page 31-33, Table 11-1, DQO # 3 all Steps: In addition to evaluating the VI risk at the Job Corps, data from the new wells and all onsite wells should be used to evaluate the VI risk on Army property to existing buildings and potentially new buildings with and without basements. In addition to buildings, the Department believes a tunnel may be in close proximity to the onsite plumes and no estimate of the VI risk has been calculated for the tunnels on site; therefore, if VI is occurring or potentially could occur, there may be a risk on the Job Corps property as a result.

Although more of an OU1 issue, the Department is not convinced that the actual boundaries of the carbon tetrachloride plume are defined definitively enough to establish an LUC boundary and monitor migration. The Department does not have confidence in using temporary wells to establish LUC boundaries; the Department would prefer that two-inch monitoring wells be used as sentry wells/monitoring points. In addition, at least one to two years of quarterly potentiometric data is needed to determine if the groundwater depth remains at or below the specified level. This is particularly important given the drought conditions experienced in 2012.

- 25) Page 33 DQO #4: The Department strongly encourages the Army to at least install a shallow monitoring well in the alley adjacent to PP-11 to help evaluate groundwater flow in the study area and determine if groundwater is flowing toward the daycare.
- 26) Page 34, Step 5, Part 5B, first point: Is the Army really that confident that there are two separate aquifers and if Army contaminants of concern are present at depth that they cannot be impacting the daycare?
- 27) Page 43, line 23: The surveying task should also include surveying the tops of the foundations for homes to be sampled for vapor intrusion. This data would allow the Army to calculate the depth to groundwater beneath a basement floor or crawl space.
- 28) Page 43, lines 32-34: The Army should clarify how it will be documented that a property owner received a right of entry request and denied entry to the property. Additional discussion may be needed with Army counsel regarding how to address properties that are rentals where the owner denies entry but homes are occupied by tenants. A process to ensure these tenants are not being exposed to excessive risk needs to be developed.
- 29) Page 44, line 29: The Department would like all VI sampling events completed simultaneously or within the same week along with groundwater surface measurements.
- 30) Page 44, line 40: In addition to the parameters listed, the Department recommends noting the status of the HVAC system and the windows.
- 31) Page 46, lines 38-44: If a residence is determined to have excess risk during a VI study, the Department will expect mitigation before multiple events occur and a risk assessment is completed.
- 32) Page 47, Line 16: The Department requests that the technical memorandums be submitted in a three-ring binder large enough to contain up to five technical memorandums. The Department can add previous memorandums and future memorandums can be submitted, three-hole punched for addition. Collating the memorandums by residence will assist in document review, management and tracking.
- 33) Page 48, lines 1-4: If a residence is determined to have excess VI risk during field sampling, the Department will expect mitigation before multiple sampling events occur and a risk assessment is completed. The Department definitely will not support the Army in waiting until the feasibility study to evaluate mitigation as an option, potentially select mitigation in the proposed plan and wait for the record of decision and remedial design/remedial action, etc.

- 34) Page 53, line 32: As mentioned previously, the Department believes monitoring wells installed in the alley adjacent to PP-11 would significantly help in understanding groundwater movement in the block north of the Army property.
- 35) Page 53, lines 37-39: Will the soil cores be screened with a PID during the deep well installation?
- 36) Page 54, lines 25-37: What actions are triggered by exceeding the remedial goal by either the ROD or the LUC/LTM Plan? The wells listed are unacceptable to determine if the LUC is adequate since they all are well outside the LUC boundary and cannot reliably prevent an unacceptable exposure. Sentry wells just outside the LUC boundary are needed or the LUC boundary must be expanded out to the listed the wells. In addition, the remedial goal is for dermal contact and is not protective for vapor intrusion if new buildings, particularly with basements, are constructed.
- 37) The presence of CT in MW-115 is interesting since the potentiometric surface is a foot higher at MW-115 than MW-118, and emphasizes the need for sentry wells in much closer proximity to the current LUC boundary.
- 38) Page 59, Table 18-1: Given the depth to groundwater in MW-110, the Department is concerned that setting the shallow well screens below ten feet in depth may still be below the potentiometric surface.
- 39) Page 5-4, lines 39-40: The Department would prefer that monitoring wells be allowed to recharge if purged dry and development resumed, particularly if there is still excess turbidity.
- 40) Page 5-5, lines 1-2: The Department recommends sampling all monitoring wells at the same time to get a complete picture of the groundwater plume rather than sampling each new well as they are installed.
- 41) Page 5-5, line 4: Borehole water levels can be collected, but potentiometric surface maps should be based on monitoring well data only.
- 42) Page 5-5, lines 29-31: The Army needs to develop a process with legal counsel to address situations where right of entry is given but a resident repeatedly cancels or moves the date. This process should outline how many attempts should be made and some type of signed notification that continued rescheduling could result in a residence not being sampled and what risks the lack of sampling could bring.

- 43) Page 5-5, Section 5.6.1: In addition to the parameters listed, the Department recommends noting the status of the HVAC system and the windows.
- 44) Page 5-6, lines 9-15: The Army should clarify how it will be documented that a property owner received a right of entry request and denied entry to the property. Additional discussion may be needed, but with Army counsel, regarding how to address properties that are rentals where the owner denies entry but homes are occupied by tenants. A process to ensure these tenants are not being exposed to excessive risk needs to be developed.
- 45) Page 5-7, line 8: What is the contingency plan if the soil is tight, water is present, etc.?
- 46) Page 7-1, Section 7: The surveying task should also include surveying the tops of the foundations for homes to be sampled for vapor intrusion. This data would allow the Army to calculate the depth to groundwater beneath a basement floor or crawl space.
- 47) Standard Operating Procedure, Soil Boring Logging: This procedure does not state a registered geologist will be logging soil borings. Is this in compliance with state rules?
- 48) Standard Operating Procedure, Decontamination of Personnel and Equipment, line 33: Although this section does indicate a schedule for replacing wash and rinse water, are there criteria for determining when these fluids are no longer acceptable?

Department of Health and Social Services Comments

General Comments

- 49) While MDHSS is generally satisfied with the approach being taken to evaluate the vapor intrusion pathway, the plan needs to address mitigation actions. If exposures are found to be occurring from vapor intrusion, it would not be acceptable to delay planning for and implementing mitigation, the need for mitigation action needs to be considered and agreed upon upfront. Therefore, as MDHSS previously requested, a decision matrix should be developed to address this. MDHSS recognizes that the plan includes Figures 11 and 12 that document decision logic for the groundwater investigation and vapor intrusion assessments; however, Figure 12 simply notes that if indoor air concentrations are above vapor intrusion screening levels (VISLs), that a determination will be made on whether immediate action is needed. The decision matrix should specifically document the conditions and contamination levels that would trigger the need for immediate mitigation action. For instance, at other vapor intrusion sites, the U.S. Environmental Protection Agency (EPA) is making mitigation decisions based on indoor air exceedance of a cancer risk of 1×10^{-5} or a hazard index of 1.

- 50) During the OU2 Vapor Intrusion Strategy Meeting, community outreach was discussed. There were tentative plans to hold a public availability session or to send a site fact sheet and letter to nearby residents. Neither of these outreach efforts has occurred yet. MDHSS recommends that plans move forward to initiate community outreach.

Specific Comments

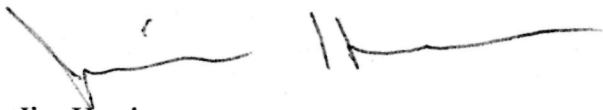
- 51) Worksheet #11 – Project/Data Quality Objectives - The data quality objectives for shallow groundwater investigations state that if two consecutive rounds of groundwater sampling indicate concentrations below VISLs, further investigation and vapor intrusion assessments are not warranted. MDHSS does not agree with this. Continued monitoring of the shallow groundwater should occur over a period of time before making a determination of no further action for the vapor intrusion pathway.
- 52) Worksheet #11 – Project/Data Quality Objectives, DQO #4 Groundwater Investigation Near Day Care Center to Determine if a VI Assessment is Warranted - MDHSS agrees that data from the wells along Stratford Avenue should be used to evaluate the potential need to install well pairs and to evaluate groundwater conditions closer to the day care center. However, please note if it is determined that a vapor intrusion investigation is warranted for the daycare and the proposed wells are installed, they should be sampled for the full suite of volatile organic compounds (VOCs) as previously recommended by MDNR.
- 53) Worksheet #14 and #16 – Project Tasks and Schedule, Reporting-VI Assessment Technical Memorandum discusses that technical memorandums will be completed for each vapor intrusion assessment. As a reminder, draft versions of the technical memorandums should be submitted to MDNR, MDHSS, and EPA for review prior to the finalized versions being provided to homeowners.
- 54) Worksheet #15 – Reference Limits and Evaluation - EPA's VISL calculator is being used for screening levels; therefore, references to Missouri Risk-Based Corrective Action technical guidance should be removed from the document.
- 55) Standard Operating Procedure - Conducting Building Surveys for Vapor Intrusion Evaluations – Please note that the standard operating procedure for locating outdoor air samples contained in the plan should be adhered to. We have noted that during several of the past sampling events the sample canister was placed on the ground outside. The canisters should be placed off the ground, away from trees, and at a location that will minimize bias.

Ms Josephine Newton-Lund
March 13, 2013
Page 9

If you have questions or concerns, please contact me at the Department of Natural Resources, Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102-0176, or by phone at (573) 522-1892.

Sincerely,

HAZARDOUS WASTE PROGRAM

A handwritten signature in black ink, appearing to read "Jim Harris", with a long horizontal stroke extending to the right.

Jim Harris
Environmental Specialist
Federal Facilities Section

JH:ls

c: Michelle Hartman, DHSS
Matthew Jefferson, USEPA